CONTRACT CHANGE ORDER

Change Requested by: Engineer

CCO: 37 Suppl. No. 0 Contract No. 04 – 0120F4 Road SF-80-13.2/13.9 **FED. AID LOC.:**

To: **AMERICAN BRIDGE/FLUOR ENTERPRISES INC A JOINT VENTURE**

You are directed to make the following changes from the plans and specifications or do the following described work not included in the plans and specifications for this contract. ***NOTE: This change order is not effective until approved by the Engineer.***

Description of work to be done, estimate of quantities and prices to be paid. (Segregate between additional work at contract price, agreed price and force account.) Unless otherwise stated, rates for rental of equipment cover only such time as equipment is actually used and no allowance will be made for idle time. This last percentage shown is the net accumulated increase or decrease from the original quantity in the Engineer's Estimate.

Adjustment of Compensation at Lump Sum:

ITEM 1.

Modify the suspender brackets and cable system including, but not limited to, the following:

1. Add suspender bracket drip plates
2. Modify the cable band bolts
3. Add turnbuckles to the handrope cable system
4. Remove the suspender rope size requirement
5. Revise anchor rod galvanizing
6. Recess elastomeric collar caulk seal
7. Revise cable system painting requirements
8. Add caulk to fill gaps between plates
9. Hot bend the suspender bracket closure plate
10. Counterbore holes through shims

Revise the first paragraph of Special Provisions Section 10-1.60, "CABLE SYSTEM," subsection "MATERIALS AND FABRICATIONS," subsection "Suspender Ropes" as shown on sheet 3 of this change order.

Revise Special Provisions Section 10-1.60, "CABLE SYSTEM," subsection "MATERIALS AND FABRICATIONS," subsection "Anchor Rods" as shown on sheet 3 of this change order.

Revise the eleventh paragraph of Special Provisions Section 10-1.60, "CABLE SYSTEM," subsection "MATERIALS AND FABRICATIONS," subsection "Elastomeric Collars" as shown on sheet 3 of this change order.

Replace Special Provisions Section 10-1.71, "CLEAN AND PAINT CABLE SYSTEM" as shown on sheets 4 through 8 of this change order.

Adjustment of Compensation at Lump Sum..... $507,242.00

Estimate of Increase in Contract Item at Contract Price:

ITEM 2.

Extend side connection plates on the suspender brackets at PP 104 and 106.

Item No. 55: FURNISH STRUCTURAL STEEL (BRIDGE) (BOX GIRDER)
317 KG (+0.00%) @ $9.00 /KG =+$2,853.00 (+0.00%)

Item No. 56: ERECT STRUCTURAL STEEL (BRIDGE) (BOX GIRDER)
317 KG (+0.00%) @ $1.00 /KG =+$317.00 (+0.00%)

The quantity increases shown herein for Items #55 and #56, when combined with the quantity shown in the Engineer's Estimate, and as modified by any previous change orders or revisions to dimensions made by the Engineer, shall be the final quantity for which payment will be made.

Total Cost for Increase in Contract Item.....$3,170.00

CONTRACT CHANGE ORDER

Change Requested by: Engineer

CCO: 37 **Suppl. No.** 0 **Contract No.** 04 – 0120F4 **Road** SF-80-13.2/13.9 **FED. AID LOC.:**

The following revised and supplemental plan sheets detail the changes addressed in this change order: 740R2, 742R1, 743R1, 747R1, 748R1, 749R1, 750R1, 751R1, 752R1, 753R1, 762R1, 813R1, 814R1, 876R3, 876S1, and 876S2 (of 1204) as shown on sheets 9 through 24 of this change order.

This change order resolves the costs associated with Contractor Request For Information (RFI) numbers 37, 39, 44, 88, 105, 146R1, 411, 412, 430R1, 430R2, 454, 455, 458, 470R0, 470R1, 473, 505R0, 505R1, 524, 548R0, 548R1, 548R2, 649, 719, 1397, 1638R1, and 1638R2 with respect to changes listed above.

This change order resolves Contractor Request For Change Order (RFCO) number 5 and Request for Change (RFC) numbers 27, 27R1, and 27R2.

CHANGE ORDER COST AND TIME SUMMARY

(ITEM 1) Adjustment of Compensation at Lump Sum	$507,242.00
(ITEM 2) Increase in Contract Items at Contract Prices	$3,170.00
Total net pay for this change order	$510,412.00

This sum constitutes full and complete compensation for furnishing all labor, material, tools and incidentals including all markups by reason of this change.

Additional field work to install the suspender bracket drip plates will be addressed in a future change order.

Estimated Cost: **Increase** ☒ **Decrease** ☐ **$510,412.00**

By reason of this order the time of completion will be adjusted as follows: **0 Days**

Submitted by

Signature Kannu Bala — **Resident Engineer** Kannu Balan, Senior T.E. — **Date** 11-29-10

Approval Recommended by

Signature B Boal — **Supervising Bridge Engineer** Brian Boal, Actg. Sup. B.E. — **Date** 30 NOV 2010

Engineer Approval by

Signature Peter Siegenthaler — **Principal Transportation Engineer** Peter Siegenthaler, Prin. T.E. — **Date** 12/13/10

We the undersigned contractor, have given careful consideration to the change proposed and agree, if this proposal is approved, that we will provide all equipment, furnish the materials, except as otherwise be noted above, and perform all services necessary for the work above specified, and will accept as full payment therefor the prices shown above.

NOTE: If you, the contractor, do not sign acceptance of this order, your attention is directed to the requirements of the specifications as to proceeding with the ordered work and filing a written protest within the time therein specified.

Contractor Acceptance by

Signature — (Print name and title) BRIAN A. PETERSEN — **Date** 10 DEC 10

In the Special Provisions Section 10-1.60, "CABLE SYSTEM," subsection "MATERIALS AND FABRICATIONS," subsection "Suspender Ropes," the first paragraph is revised as follows:

Wire for suspender ropes shall conform to the requirements of ASTM Designation: A 603 with Class A galvanizing. ~~The wire rope construction shall be 6x37 with an independent wire rope core (IWRC) or center fit rope core (CFRC).~~ The wires within a suspender rope shall not be spliced. The suspender ropes shall have an ultimate tensile strength of not less than 1,350 N/mm^2 and shall be prestretched to obtain a modulus of elasticity not less than 138,000 N/mm^2. The prestretching test may be performed by the wire rope supplier. The wire rope supplier shall provide certified test results to show the required minimum modulus of elasticity has been achieved.

In the Special Provisions Section 10-1.60, "CABLE SYSTEM," subsection "MATERIALS AND FABRICATIONS," subsection "Anchor Rods," is revised as follows:

Anchor rods shall conform to the requirements of ASTM Designation: A 354, Grade BC or BD and as specified in these special provisions. Nuts shall conform to the requirements of ASTM Designation: A 563. Washers shall conform to the requirements of ASTM Designation: F 436.

Anchor rods for PWS shall conform to grade BD. ~~and shall be mechanically galvanized~~.

Anchor rods for suspenders shall conform to grade BC ~~and shall be hot-dip galvanized~~.

Anchor rods designated as grade A 354, Grade BC and Grade BD shall be galvanized in accordance with the provisions in "Steel Structures," of these special provisions.

Prior to shipment, all rods shall be fully threaded into their assigned mating component, including nuts, to ensure that the thread pitch has been fabricated without error and the process of turning does not strip any of the threads.

In the Special Provisions Section 10-1.60, "CABLE SYSTEM," subsection "MATERIALS AND FABRICATIONS," subsection "Elastomeric Collars," the eleventh paragraph is revised as follows:

Caulking materials shall be tested to prove their ability to adhere to the substrates. Tests made by the manufacturer as part of product development are acceptable. Caulk seal shall be bonded to the suspender rope and to the vertical surface of the recess formed in the elastomeric split collar but shall not be bonded at the bottom contact surface with the elastomer. The caulk seal shall be installed with a proper shape factor as recommended by the manufacturer. The proper shape factor shall be obtained by installing and bonding a backing material into the recess or by molding a contour into the elastomeric split collar surface in contact with the bottom of the caulk seal. The backing material or the formed contour in the elastomer shall be covered with a film to prevent bonding of the caulking seal. Bond tests of the caulk seal to the elastomeric material and the suspender rope shall be performed per the recommendations of the caulk seal manufacturer, and shall be submitted for review and approval by the Engineer. ~~The caulk seal shall not bond to the elastomeric collar or shall otherwise be installed with a de-bonding film over the elastomer.~~

In the Special Provisions Section 10-1.71, "CLEAN AND PAINT CABLE SYSTEM," is replaced as follows:

10-1.71 CLEAN AND PAINT CABLE SYSTEM

This work shall consist of surface preparation and painting of the cable system as shown on the plans, in accordance with the provisions in Section 59, "Painting," of the Standard Specifications and these special provisions.

The cable paint system shall be applied to the wire wrapped main cable, ~~cable strand sockets, cable strand anchor rods, shims and nuts,~~ cable bands (except for surfaces that come into contact with the main cable, the metallized surfaces, and as specified in Section 10-1.60, "CABLE SYSTEM"; Steel castings of these special provisions, and as shown on the plans), cable band bolts, cable band caulking, ~~saddles~~, cable shrouds, suspender ropes, suspender rope sockets, suspender rope separators, suspender rope anchor rods and nuts, split collars, elastomeric collars, ~~keeps angles, keeper bolts~~, shims, suspender clamps, ~~handropes, handrope stanchions, handrope supports, handrope gates, handrope anchors,~~ handropes and all associated handrope system hardware and appurtenances in accordance with the manufacturer's recommendations and these special provisions.

A qualified representative of the manufacturer shall be present for the test demonstration, and for at least 3 days at the beginning of the application and at completion of the application. The manufacturer's representative shall certify to the Engineer in writing that the proper installation procedures are being followed, including, but not limited to the following:

A. Surface preparation.
B. Type of equipment used.
C. Mixing of the material components.
D. Method of application, and finish.

Handling, mixing and addition of thinners or any other material shall be performed in accordance with the manufacturer's recommendations and with prior approval of the Engineer.

The cable paint system shall not be applied when weather or surface conditions, as determined by the Engineer, are such that the material cannot be properly handled, applied, and cured within the specified time.

The Contractor shall perform a field test demonstration, in the presence of the Engineer and the manufacturer's representative, of all cable paint system application procedures to be used. The field test demonstration shall consist of surface application and painting of two adjacent cable bands and the main cable between them. The Contractor shall notify the Engineer at least 20 days prior to the test demonstration.

MATERIALS

The cable paint system shall consist of a primer, a two intermediate coat Noxyde Plus paint system, or equal, and a finish coat. The Noxyde Plus cable paint system shall be manufactured by the following supplier:

VENDOR ADDRESS AND PHONE NUMBER
MARTIN MATHYS S.A. KOLENBERG 23 3545 ZELEM/HALEN BELGIUM

The primer shall be a waterborne, single component acrylic coating with highly elastic polymers that cure to a highly elastic, seamless rubber coating. The primer shall be Pegalink or equal for the galvanized cable system components and Noxyde Plus or equal for the non-galvanized cable system components as listed under "Painting" of this section.

The two intermediate coats shall be 100 percent Noxyde Plus, or equal.

The finish coat shall be a water-borne, single component semi-gloss acrylic paint. The finish coat shall be Pegacryl or equal.

The primer, intermediate coats, and finish coat shall be three different colors. The finish coat color shall ~~match Federal Standard 595B, No. 26408~~ conform to the provisions in "Clean and Paint Structural Steel," of the special provisions. Color samples shall be submitted to the Engineer for approval 60 days prior to the start of painting.

Each shipment of cable paint system materials shall be accompanied by a Certificate of Compliance as provided in Section 6-I.07, "Certificates of Compliance," of the Standard Specifications. The certificate shall state that the materials and fabrication involved comply in all respects to the specifications and data submitted in obtaining approval, and shall include the type of paint products used and the application rates of all components of the cable paint system. The first shipment shall include a copy of the manufacturer's quality assurance program listing all in-house testing criteria.

Copies of Material Safety Data Sheets (MSDS) for all materials shall be kept on site for review by the Engineer.

The Contractor shall be responsible for the workmanship and performance of the installed cable paint system. The cable paint system shall be applied by a manufacturer certified applicator.

The primer for the galvanized cable ~~paint~~ system components shall conform to the following physical requirements:

Property	Test	Requirement
Weight of Solids	ASTM Designation: D2369	48% ± 2%
Specific Gravity		1.2± 0.03
Volume of Solids	ASTM Designation: D2697	45.4% ± 2%
Elasticity		200% Elongation
Water Resistance		100%
Alkali Resistance		Fair
Salt Spray Resistance		100%
Water Vapor Transmission	ASTM Designation: E96	15g H2O/m2 in 24 hours
Chemical Resistance	10% Acid solution	Fair

The primer for the non-galvanized cable system components and the intermediate coats of the cable paint system shall conform to the following physical requirements:

Property	Test	Requirement
Weight of Solids	ASTM Designation: D2369	67% ± 2%
Specific Gravity		1.26± 0.02
Volume of Solids	ASTM Designation: D2697	57% ± 2%
Elasticity	CSTB No. 15.381	200% Elongation
Water Resistance		12 mo. Immersion, no change
Alkali Resistance		No damage from Na(OH) at pH = 14
Salt Spray Resistance	CSTB No. 15.381	100%
Water Vapor Transmission	ASTM Designation: E96	5.5g H_2O/m2 in 24 hours
Chemical Resistance	25% mineral acid solution	Excellent
UV Ray Resistance		100% against outdoor exposure
Shore A Hardness		70
Aging and Adhesion		Unaffected after 8 hours, 60°C to -20°C with rain, frost, UV light and humidity
Sulfur Dioxide Resistance		100% resistance
Ozone Resistance		No cracking or embrittlement when subjected to 1 PPM ozone for 30 days
Hot water immersion		No effect after 1000 hours in 38°C water
Impact Resistance	DIN 51155	90 N
Tensile Adhesion	CSTB (France)	47.5 An/cm2

Sand Blasting Resistance	DIN 51155	Unaffected at 20,000 shots

A minimum of four ounces of polyolefin beads conforming to the properties in the following table shall be added to each gallon of finish coat applied to horizontal or walking surfaces. The beads shall be added to the finish coat prior to application and be thoroughly dispersed into the coating during normal mixing procedures. The cured finish coat, following addition of polyolefin beads, shall have a minimum average slip-resistance of 0.50 when wet as determined in accordance with ASTM Designation: F 1679. Additional beads shall be added if the average slip-resistance fails to meet this requirement as determined by the Contractor's independent laboratory upon testing of a sample of the finish coat. A copy of the slip-resistance testing results shall be furnished to the Engineer prior to application of finish coat.

Property	Requirements
Composition	Polyethylene or Polypropylene or a combination thereof
Appearance	White free-flowing powder
Size	210 to 300 µm
Specific Gravity	0.90
Initial Melt/Softening point	-6°C
Final Melt Point	166°C
Flash Point	greater than 275°C

The Contractor shall verify by testing that all properties are met. The physical properties shall be verified by an independent laboratory approved by the Engineer.

All material components of the cable paint system shall be supplied to the job site in the manufacturer's unopened packaging. Material for the cable paint system in opened or damaged containers shall not be used and shall be removed from the job site at the Contractor's expense.

All material components of the cable paint system shall be stored in cool, dry conditions, between 5°C and 20°C, out of direct sunlight and in accordance with the manufacturer's recommendations and Health and Safety regulations.

CLEANING

The main cables, suspender ropes, and handropes shall be cleaned in accordance with the provisions of Surface Preparation Specification No. 1, "Solvent Cleaning," of the SSPC: The Society for Protective Coatings. All traces of the zinc waterproofing paste applied to the main cable wires which has bled through the exterior wire wrapping shall be removed. Solvent cleaning shall be supplemented by hand tool cleaning in accordance with the provisions of Surface Preparation Specification No. 2, "Wire Brushing, and Hand Washing, and Rinsing," of the SSPC: The Society for Protective Coatings to remove any non-adherent shop applied coating, or detrimental foreign matter unable to be removed by solvent cleaning. Brass wire brushes shall be used for this surface preparation. Steel wire brushes will not be permitted.

Non-galvanized cable system components ~~Handrope stanchions, cable shrouds, and the surfaces of cable bands, saddles, and other items which are not in contact with the main cable or are metallized,~~ shall be dry blast cleaned in the shop in accordance with the provisions of Surface Preparation Specification No. 10, "Near White Blast Cleaning," of the SSPC: The Society for Protective Coatings. Blast cleaning shall leave all surfaces with a dense, uniform, angular, anchor pattern of no less than 40 µm as measured in accordance with the requirements of ASTM Designation: D 4417.

All steel surfaces to be coated with the Noxyde Plus cable paint system shall be cleaned to remove all oil, dirt, rubber, dust, and other material which would prevent proper bonding to and curing of the primer.

Within 72 hours of wire wrapping of the main cable, and prior to application of the primer, the main cable shall be securely wrapped with a waterproof film to protect from salt air. The waterproof film shall not be removed sooner than 72 hours prior to application of the primer. Solvent and hand cleaning, as described in this section, will not be permitted as a substitute for placement of waterproof film.

Immediately prior to the application of any component of the Noxyde Plus paint system, the receiving surface shall be dry and all remaining dust or loose particles shall be removed by blowing with clean, dry, oil free air.

PAINTING

Primer shall be applied within 4 hours of the completion of surface preparation. All locations showing evidence of contamination, as determined by the Engineer, shall be recleaned at the Contractor's expense. The Engineer shall be the sole judge of the need for recleaning.

Primer shall be applied in accordance with the manufacturer's recommendations. The primer shall be ~~spray~~ applied ~~in a fine even spray so as~~ to produce a uniform coating. ~~The dry film thickness of the primer shall be between 35 µm and 50 µm.~~

Primer for the following galvanized cable system components shall be Pegalink or equal. The dry film thickness for the Galvanized Cable System Components primer shall be between 35 µm and 50 µm

Galvanized Cable System Component	
Cable band bolts, washers, and nuts	Handrope shoulder bolts
	Handrope strand sockets
Suspender rope separators, clamps, bolts, and nuts	Handrope turnbuckles
Suspender rope clamp assemblies	Suspender Shims
Suspender rope sockets, anchor rods and nuts	Handropes
Suspender Rope split collars	Wrapping Wire

Primer for the following non-galvanized cable system components shall be Noxyde Plus or equal. The dry film thickness for the Non-galvanized Cable System Component primer shall be between 225 µm and 275 µm.

Non-galvanized Cable System Component	
Cable bands (Except for surfaces that come into contact with the main cable, metallized surfaces, as specified in section 10-1.60 CABLE SYSTEM; Steel castings of these special provisions, and as shown on the plans.)	Handrope stanchions
Cable shrouds	Handrope supports
	Handrope gates

The Noxyde Plus or equal p~~P~~rimer shall be applied in the shop to the Non-galvanized Cable System Components. ~~handrope stanchions, cable shrouds, and the surfaces of cable bands, saddles, and other items which are not in contact with the main cable or are metallized.~~

Surfaces painted with primer shall be protected from damage. Should damage to the primer occur, as determined by the Engineer, the surface shall be repaired at the Contractor's expense prior to application of the intermediate coats.

The primer shall cure before application of the intermediate coats. The Engineer with the assistance of the manufacturer's representative at the job site shall determine when the cure is adequate to continue.

The intermediate coats shall be applied within 24 hours of the application of primer, weather permitting, except for the shop applied non-galvanized cable system components. ~~handrope stanchions, cable shrouds, and the surfaces of cable bands and saddles~~. All undercoat surfaces showing evidence of contamination, as determined by the Engineer, shall be cleaned. The Engineer shall be the sole judge of the need for recleaning.

The two intermediate coats shall be applied in accordance with the manufacturer's recommendations. Each intermediate coat shall be applied to produce a uniform coating. ~~The two intermediate coats shall be spray applied in a fine even spray so as to produce a uniform coating.~~ The total dry film thickness of the two intermediate coats shall be between 200 µm and 350 µm.

The two intermediate coats shall cure before application of the finish coat. The Engineer with the assistance of the manufacturer's representative at the job site shall determine when the cure is adequate to continue.

The finish coat shall be applied within 24 hours of the application of intermediate coats, weather permitting. All locations showing evidence of contamination, as determined by the Engineer, shall be cleaned in accordance with the manufacturer's recommendations.

The application of the intermediate coats and the finish coat shall not be made if rain is forecast within 6 hours of application, or as determined by the Engineer. The finish coat shall be applied only when the atmospheric and steel temperatures are above 10°C and the relative humidity is below 85 percent, and these conditions are forecast to be maintained for a minimum of 6 hours. The temperature of the main cable shall be at least 3°C above the dew point.

The finish coat shall be applied in accordance with the manufacturer's recommendations. The finish coat shall be applied to produce a uniform coating. The dry film thickness of the finish coat shall be between 35 µm and 50 µm.

For galvanized cable components, ~~T~~the total dry film thickness of all coats shall be between 270 µm and 450 µm. For non-galvanized cable components, the total dry film thickness of all coats shall be between 460 µm and 675 µm. The color of each coat shall be uniform throughout the entire member.

The Contractor shall check wet film thickness at least once every 10 square meters using a gauge pin or standard comb type thickness gauge.

The painted surface shall be checked for visible pinholes and other surface defects. The paint system shall provide a smooth, pinhole free continuous film on all coated surfaces.

In the event that any materials are damaged during this work due to the Contractor's operations, the Contractor shall repair or replace the damaged materials at the Contractor's expense, and as approved by the Engineer.

PAYMENT

The contract lump sum price paid for clean and paint cable system shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, including the services of the manufacturer's representative as specified herein, and for doing all the work involved in clean and paint cable system, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.